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controlling a gain of the amplitude of the input signal based on the amplitude control signal generated in the amplitude control signal generation step.--

REMARKS

Claims 1-35 remain in the application and have been amended hereby.

As will be noted from the Declaration, Applicant is a citizen and resident of Japan and this application originated there.

Accordingly, the amendments to the specification are made to place the application in idiomatic English, and the claims are amended to place them in better condition for examination.

An early and favorable examination on the merits is earnestly solicited.

Respectfully submitted,
COOPER & DUNHAM, LLP

Jay H. Maioli
Reg. No. 27,213

JHM/AVF/pmc

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE ABSTRACT OF THE DISCLOSURE

The Abstract of the Disclosure has been amended as follows:

--[In the present invention,] A method and apparatus for compensating for a distortion component of a device such as a power amplifier [can be easily compensated for, and a simple structure] can be achieved without requiring a demodulator. A voltage comparator [(17)] compares an envelope voltage of an output [PA_ out] of a power amplifier [(14), which] that has been corrected by [an AM_ctl] a signal outputted from an amplitude correction memory [(4),] with an envelope voltage before the correction, to detect which of the envelope voltages is [larger/smaller] larger. [Further, a] A logic section [(18)] adds and/or subtracts data in an amplitude compensation memory[, so as] to correct the relationship as to which of the envelope voltages is [larger/smaller] larger. [At this time, data] Data in the memory is updated by one bit for every [one time of] operation. [Therefore, the] The data is corrected to a correct value by accessing one [same] address [sometimes]. In an inputted high-frequency signal [PA-in], one [same] voltage appears at a [certain provability] point on the time axis, if the envelope changes like a QPSK modulation wave[, for example]. Thus, all addresses are corrected to proper values [as the time goes].--

IN THE CLAIMS

Claims 1-35 have been amended as follows:

--1. (Amended) A distortion compensation apparatus for compensating for a distortion component generated in a device, comprising:

first envelope detection means for detecting an input envelope voltage of an input signal supplied to the device;

second envelope detection means for detecting an output envelope voltage of an output signal of the device;

comparison means for comparing the input envelope voltage detected by the first envelope detection means with the output envelope voltage detected by the second envelope detection means;

comparison result correction means for correcting a relationship [concerning] corresponding to a result of the comparison made by the comparison means[, as to] indicating which of the envelope voltages is [larger/smaller] larger;

amplitude control signal generation means for generating an amplitude control signal for controlling an amplitude of the input signal[,] based on a correction output of the comparison result correction means; and

amplitude control means for controlling a gain of the amplitude of the input signal[,] based on the amplitude control signal generated by the amplitude control signal generation means.

--2. (Amended) The apparatus according to claim 1, wherein the amplitude control signal generation means includes amplitude correction data output means for outputting data for amplitude correction[,] in correspondence with the input envelope voltage detected by the first envelope detection means, and for updating data for amplitude correction[,] based on the correction output of the comparison result correction means.

--3. (Amended) The apparatus according to claim 2, wherein the amplitude correction data output means is a writable storage medium [which previously] that stores the data for amplitude correction.

--4. (Amended) The apparatus according to claim 3, wherein [two of the writable storage mediums, each being the same as] the amplitude correction data output means[,are provided] comprises two writable storage media.

--5. (Amended) The apparatus according to claim 4, wherein the two writable storage [mediums] media alternately perform reading and updating of the data for amplitude correction.

--6. (Amended) The apparatus according to claim 1, wherein the comparison result correction means latches the comparison result of the comparison means, and corrects and

outputs [digital] one of a +1 [or] bit and a -1 bit[,] based on a latch value [thereof] of the result.

--7. (Amended) A distortion compensation apparatus for compensating for a distortion component generated in a device, comprising:

first envelope detection means for detecting an input envelope voltage of an input signal supplied to the device;

second envelope detection means for detecting an output envelope voltage of an output signal of the device;

calculation means for [obtaining] calculating a difference between the input envelope voltage detected by the first envelope detection means and the output envelope voltage detected by the second envelope detection means;

comparison means for comparing the difference [obtained] calculated by the calculation means with a predetermined reference value;

comparison result correction means for correcting a relationship [concerning] corresponding to a result of the comparison made by the comparison means[, as to] indicating which of the difference and the reference value is [larger/smaller] larger;

amplitude control signal generation means for generating an amplitude control signal for controlling a gain of an amplitude of the input signal[,] based on a correction output of the comparison result correction means; and

amplitude control means for controlling the gain of the

amplitude of the input signal[,] based on the amplitude control signal generated by the amplitude control signal generation means.

--8. (Amended) The apparatus according to claim 7, wherein the amplitude control signal generation means includes amplitude correction data output means for outputting data for amplitude correction[,] in correspondence with the input envelope voltage detected by the first envelope detection means, and for updating data for amplitude correction[,] based on the correction output of the comparison result correction means.

--9. (Amended) The apparatus according to claim 8, wherein the amplitude correction data output means is a writable storage medium [which previously] that stores the data for amplitude correction.

--10. (Amended) The apparatus according to claim 9, wherein [two or the writable storage mediums, each being the same as] the amplitude correction data output means[, are provided] comprises two writable storage media.

--11. (Amended) The apparatus according to claim 10, wherein the two writable storage [mediums] media alternately perform reading and updating of the data for amplitude correction.

--12. (Amended) The apparatus according to claim 7, wherein the comparison result correction means latches the comparison result of the comparison means, and corrects and outputs [digital] one of a +1 [or] bit and a -1 bit[,] based on a latch value [thereof] of the result.

--13. (Amended) The apparatus according to claim 7, further comprising two comparison means for comparing the difference calculated by the calculation means with predetermined reference values[, respectively,] to obtain two comparison results.

--14. (Amended) The apparatus according to claim 13, wherein the comparison result correction means corrects a relationship [concerning] corresponding to the two comparison results[, as to] indicating which of the difference and the reference values are [larger/smaller] larger.

--15. (Amended) The apparatus according to claim 1, further comprising:

phase control signal generation means for generating a phase control signal for controlling a phase of the input signal[,] in correspondence with the input envelope voltage detected by the first envelope detection means; and

phase control means for controlling the phase of the input signal[,] based on the phase control signal generated by the phase control signal generation means.

--16. (Amended) The apparatus according to claim 15, wherein the amplitude control signal generation means includes amplitude correction data output means for outputting data for amplitude correction[,] in correspondence with the input envelope voltage detected by the first envelope detection means, and for updating the data for amplitude correction[,] based on the correction output of the comparison result correction means.

--17. (Amended) The apparatus according to claim 16, wherein the amplitude correction data output means is a writable storage medium [which previously] that stores the data for amplitude correction.

--18. (Amended) The apparatus according to claim 17, wherein [two of the writable storage mediums each being the same as] the amplitude correction data output means [are provided] comprises two writable storage media.

--19. (Amended) The apparatus according to claim 18, wherein the two writable storage [mediums] media alternately perform reading and updating of the data for amplitude correction.

--20. (Amended) The apparatus according to claim 15, wherein the comparison result correction means latches the comparison result of the comparison means, and corrects and

outputs [digital] one of a +1 [or] bit and a -1 bit[,] based on a latch value [thereof] of the result.

--21. (Amended) The apparatus according to claim 7, further comprising:

phase control signal generation means for generating a phase control signal for controlling a phase of the input signal[,] in correspondence with the input envelope voltage detected by the first envelope detection means; and

phase control means for controlling the phase of the input signal[,] based on the phase control signal generated by the phase control signal generation means.

--22. (Amended) The apparatus according to claim 13, further comprising:

phase control signal generation means for generating a phase control signal for controlling a phase of the input signal[,] in correspondence with the input envelope voltage detected by the first envelope detection means; and

phase control means for controlling the phase of the input signal[,] based on the phase control signal generated by the phase control signal generation means.

--23. (Amended) A distortion compensation apparatus for compensating for a distortion component generated in a device, comprising:

first envelope detection means for detecting an input

envelope voltage of an input signal supplied to the device;

phase control signal generation means for generating a phase control signal for controlling a phase of the input signal[,] in correspondence with the input envelope voltage detected by the first envelope detection means;

phase control means for controlling the phase of the input signal[,] based on the phase control signal generated by the phase control signal generation means;

second envelope detection means for detecting an output envelope voltage of an output signal of the device;

phase difference detection means for detecting a phase difference between the input envelope voltage detected by the first envelope detection means and the output envelope voltage detected by the second envelope detection means; and

addition means for adding the phase difference detected by the phase difference detection means to the phase control signal generated by the phase control signal generation means, and for supplying an addition result to the phase control means.

--24. (Amended) The apparatus according to claim 23, further comprising:

comparison means for comparing the input envelope voltage detected by the first envelope detection means with the output envelope voltage detected by the second envelope detection means;

comparison result correction means for correcting a

relationship [concerning] corresponding to a result of the comparison made by the comparison means[, as to] indicating which of the envelope voltages is [larger/smaller] larger;

amplitude control signal generation means for generating an amplitude control signal for controlling an amplitude of the input signal[,] based on a correction output of the comparison result correction means; and

amplitude control means for controlling a gain of the amplitude of the input signal[,] based on the amplitude control signal generated by the amplitude control signal generation means.

--25. (Amended) The apparatus according to claim 24, wherein the amplitude control signal generation means includes amplitude correction data output means for outputting data for amplitude correction[,] in correspondence with the input envelope voltage detected by the first envelope detection means, and for updating the data for amplitude correction[,] based on the correction output of the comparison result correction means.

--26. (Amended) The apparatus according to claim 25, wherein the amplitude correction data output means is a writable storage medium [which previously] that stores the data for amplitude correction.

--27. (Amended) The apparatus according to claim 26,

wherein [two of the writable storage mediums, each being the same as] the amplitude correction data output means[, are provided] comprises two writable storage media.

--28. (Amended) The apparatus according to claim 27, wherein the two writable storage [mediums] media alternately perform reading and updating of the data for amplitude correction.

--29. (Amended) The apparatus according to claim 24, wherein the comparison result correction means latches the comparison result of the comparison means, and corrects and outputs [digital] one of a +1 [or] bit and a -1 bit[,] based on a latch value [thereof] of the result.

--30. (Amended) A distortion compensation method for compensating for a distortion component generated in a device, comprising the steps of :

[a first envelope detection step of] detecting an input envelope voltage of an input signal supplied to the device;

[a second envelope detection step of] detecting an output envelope voltage of an output signal of the device;

[a comparison step of] comparing the input envelope voltage detected in the [first] input envelope detection step with the output envelope voltage detected in the [second] output envelope detection step;

[a comparison result correction step of] correcting a

relationship [concerning] corresponding to a result of the comparison made in the comparison step[, as to] indicating which of the envelope voltages is [larger/smaller] larger;

[an amplitude control signal generation step of] generating an amplitude control signal for controlling an amplitude of the input signal[,] based on a correction output of the comparison result correction step; and

[an amplitude control step of] controlling a gain of the amplitude of the input signal[,] based on the amplitude control signal generated by the amplitude control signal generation step.

--31. (Amended) The method according to claim 30, further comprising the steps of:

[a phase control signal generation step of] generating a phase control signal for controlling a phase of the input signal[,] in correspondence with the input envelope voltage detected in the [first] input envelope detection step; and

[a phase control step of] controlling the phase of the input signal[,] based on the phase control signal generated in the phase control signal generation step.

--32. (Amended) A distortion compensation method for compensating for a distortion component generated in a device, comprising the steps of:

[a first envelope detection step of] detecting an input envelope voltage of an input signal supplied to the device;

[a second envelope detection step of] detecting an output envelope voltage of an output signal of the device;

[a calculation step of obtaining] calculating a difference between the input envelope voltage [detected in the first envelope detection step] and the output envelope voltage [detected in the second envelope detection step];

[a comparison step of] comparing the difference obtained in the calculation step with a predetermined reference value;

[a comparison result correction step of] correcting a relationship [concerning] corresponding to a result of the comparison made in the comparison step[, as to] indicating which of the difference and the reference value is [larger/smaller] larger;

[an amplitude control signal generation step of] generating an amplitude control signal for controlling a gain of an amplitude of the input signal[,] based on a correction output of the comparison result correction step; and

[an amplitude control step of] controlling the gain of the amplitude of the input signal[,] based on the amplitude control signal generated in the amplitude control signal generation step.

--33. (Amended) The method according to claim 32, further comprising the steps of:

[a phase control signal generation step of] generating a phase control signal for controlling a phase of the input signal[,] in correspondence with the input envelope voltage

[detected in the first envelope detection step]; and

a phase control step of controlling the phase of the input signal[,] based on the phase control signal generated in the phase control signal generation step.

--34. (Amended) A distortion compensation method for compensating for a distortion component generated in a device, comprising the steps of:

[a first envelope detection step of] detecting an input envelope voltage of an input signal supplied to the device;

[a phase control signal generation step of] generating a phase control signal for controlling a phase of the input signal[,] in correspondence with the input envelope voltage [detected in the first envelope detection step];

[a phase control step of] controlling the phase of the input signal[,] based on the phase control signal generated in the phase control signal generation step;

[a second envelope detection step of] detecting an output envelope voltage of an output signal of the device;

[a phase difference detection step of] detecting a phase difference between the input envelope voltage [detected in the first envelope detection step] and the output envelope voltage [detected in the second envelope detection step]; and

[an addition step of] adding the phase difference detected in the phase difference detection step to the phase control signal generated in the phase control signal generation step, and [of] supplying an addition result to the

phase control step.

--35. (Amended) The method according to claim 34, further comprising the steps of:

[a comparison step of] comparing the input envelope voltage [detected in the first envelope detection step] with the output envelope voltage [detected in the second envelope detection step];

[a comparison result correction step of] correcting a relationship [concerning] corresponding to a result of the comparison made in the comparison step[, as to] indicating which of the envelope voltages is [larger/smaller] larger;

[an amplitude control signal generation step of] generating an amplitude control signal for controlling an amplitude of the input signal[,] based on a correction output of the comparison result correction step; and

[an amplitude control step of] controlling a gain of the amplitude of the input signal[,] based on the amplitude control signal generated in the amplitude control signal generation step.--